Naturita, Colorado, Disposal Site

Long-Term Surveillance and Maintenance Program

U.S. Department of Energy
Grand Junction Office

FACT SHEET

The Grand Junction Office has provided cost-effective and efficient stewardship for more than 10 years

Overview

Uranium ore was processed in Naturita, Colorado, between 1939 and the early 1980s. These operations created process-related wastes and tailings, a sandlike waste product containing radioactive materials and other contaminants. The U.S. Department of Energy (DOE) completed cleanup of the Naturita processing site in 1997. Remedial action consisted of encapsulating radioactive materials from the millsite and nearby vicinity properties in an engineered disposal cell near Uravan, Colorado. The disposal location is called the Naturita Disposal Site.

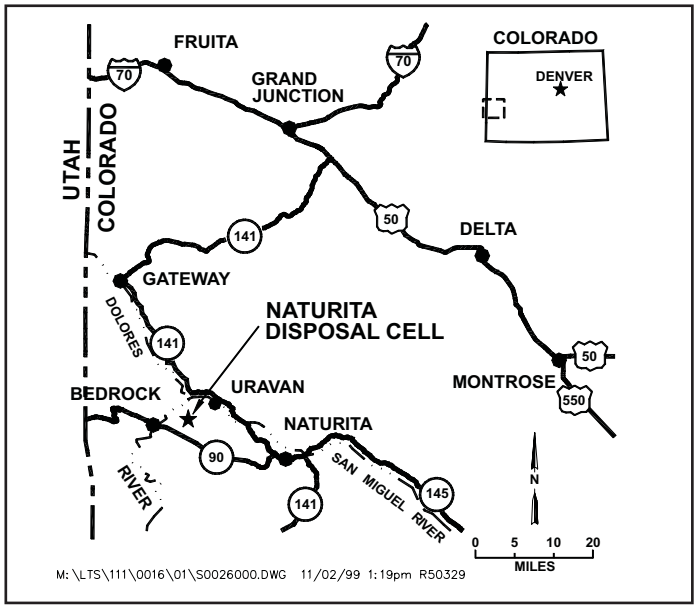
The U.S. Nuclear Regulatory Commission included the Naturita Disposal Cell under general license in 1999. DOE is responsible, under the general license, for the long-term custody, monitoring, and maintenance of the site. The DOE Long-Term Surveillance and Maintenance (LTSM) Program at the Grand Junction (Colorado) Office is responsible for the long-term safety and integrity of the disposal site.

In 1988, DOE established the LTSM Program to provide stewardship of disposal cells that contain low-level radioactive material after completion of environmental restoration activities. The mission of the LTSM Program is to ensure that the disposal cells continue to prevent release of contaminated materials to the environment. These materials will remain potentially hazardous for thousands of years. As long as the disposal cells function as designed, risks to human health and the environment are negligible.

The LTSM Program maintains the safety and integrity of the disposal cell through periodic monitoring, inspections, and maintenance; serves as a point of contact for stakeholders; and maintains an information repository at the DOE Grand Junction Office for sites in the LTSM Program.

Regulatory Setting

Congress passed the Uranium Mill Tailings Radiation Control Act in 1978 (Public Law 95–604) that specified remedial action for 24 inactive processing millsites where uranium was produced for the Federal Government.
DOE remediated these sites under the Uranium Mill Tailings Remedial Action Project and encapsulated the radioactive material in U.S. Nuclear Regulatory Commission-approved disposal cells. Cleanup standards



were promulgated by the U.S. Environmental Protection Agency in Title 40 *Code of Federal Regulations* (CFR) Part 192. The U.S. Nuclear Regulatory Commission license was issued in accordance with 10 CFR 40.

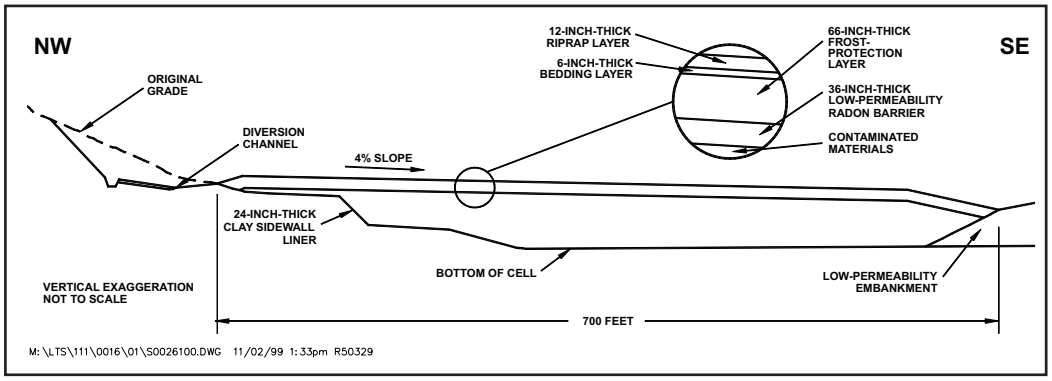
Naturita Disposal Site

The Naturita Disposal Site is located in Montrose County, approximately 13 miles northwest of Naturita, Colorado. Residual radioactive material from Naturita was relocated to a disposal cell near the UMETCO (formerly Union Carbide Corporation) disposal site at Uravan, Colorado. This property is located above the San Miguel River floodplain. Title to the property containing the Naturita Disposal Cell was transferred to DOE in 1995.

Rare Metals Company built a uranium-processing mill near the San Miguel River in Naturita in 1930. Vanadium Corporation of America acquired the property and operated the mill intermittently from 1939 until it was dismantled in 1963. Stockpiled mill tailings were removed from the Naturita millsite for reprocessing in the late 1970s, leaving only contaminated mill building debris and soil at the former millsite and on vicinity properties. All uranium oxide produced at the Naturita mill was sold to the U.S. Atomic Energy Commission.

The U.S. Nuclear Regulatory Commission and the State of Colorado concurred with the DOE remedial action plan to relocate the residual radioactive material from the Naturita processing site and vicinity properties to the Uravan site for permanent disposal. Remediation began

in 1995 and the cell was closed in June 1998. Disposal cell contents consist of 971,762 dry tons of contaminated material, with a total activity of 79 curies of radium-226.



Northwest–Southeast Cross Section of Naturita Disposal Cell

The disposal cell lies on strata of the Salt Wash Member of the Morrison Formation. The uppermost aquifer occurs in Wingate Formation sandstone and is isolated from the cell by the impermeable Summerville Formation. Any leachate from the disposal cell would most likely accumulate on the Salt Wash/Summerville contact.

Contaminants from the cell are unlikely to leach into the Wingate aquifer, which is 600 feet below the cell. Disposal cell materials contained little moisture, and no indication of contamination has been observed in regional groundwater samples from the Wingate Formation after more than 40 years of uranium mining and processing in the area.

Cell Design

The disposal cell measures approximately 650 feet by 700 feet. It occupies 10 acres of the 26.7-acre site. A posted wire fence surrounds the cell.

The Naturita Disposal Cell occupies the north end of a pit where UMETCO quarried sandstone for use as erosion-protection material on its disposal cell. The cell is bounded on three sides by sandstone bedrock and on the fourth side by a low-permeability embankment. UMETCO constructed a disposal cell to contain raffinate crystals in the south portion of the quarry. Upon closure, the UMETCO cell and an associated tailings disposal impoundment will become the responsibility of the LTSM Program.

Before placement of contaminated materials, clay was scraped from the sandstone floor of the quarry. The walls were cleared of sandstone rubble and sloped away from the floor. The sides of the excavation were lined with 24 inches of clay.

The cover of the Naturita disposal cell is a multi-component system designed to encapsulate and protect the contaminated materials for 1,000 years. The low-permeability radon barrier (the first layer placed over the compacted contaminated materials) reduces radon emissions and minimizes precipitation from percolating through the contaminated materials and into the underlying bedrock. This layer consists of compacted clayey soils. A frost-protection layer consisting of compacted soil protects the radon barrier from freeze-thaw damage. A bedding layer of coarse sand and fine gravel was placed over the frost-protection layer and covered with riprap. This final rock layer protects the cell against wind and water erosion and discourages cell intrusion.

The maximum cell surface grades are 4 percent on the top slope and 20 percent on the side slopes. A riprap apron was placed around the perimeter of the disposal cell to provide added protection at the toe of the cell and to channel runoff water away from the cell. A rock-lined interceptor ditch adjacent to the northwest up-slope portion of the disposal cell diverts surface flow around and away from the cell. Disturbed areas were graded to promote positive drainage and were reseeded with native grasses.

LTSM Program Activities

The LTSM Program conducts annual inspections of this site to evaluate the condition of surface features and to determine if any actions are required to maintain site integrity and security.

DOE measures water levels in a standpipe that terminates at the bottom of the cell and in monitor wells that extend to the Salt Wash/Summerville contact. Monitoring will continue until at least 2004. Samples will be collected from monitor wells and analyzed if enough water is present. If contamination is detected in the samples, DOE will monitor water quality in the Wingate Sandstone aquifer.

The disposal cell at Naturita is designed and constructed to last for 200 to 1,000 years. However, the general license has no expiration date, and DOE understands that its responsibility for the safety and integrity of the Naturita site will last indefinitely.

Contacts

For more information about the LTSM Program or about the Naturita Disposal Site, contact

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or visit the Internet site at
http://www.gjo.doe.gov/programs/ltsm